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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/582,248	06/09/2006	Sung Ho Kim	3449-0645PUS1	2814
2292 7590 12/02/2009 BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747				
EXAMINER				
CALEY, MICHAEL H				
ART UNIT		PAPER NUMBER		
2871				
NOTIFICATION DATE		DELIVERY MODE		
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary

Application No.

10/582,248

Applicant(s)

KIM ET AL.

Examiner

MICHAEL H. CALEY

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 September 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 September 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/GS/US)
Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-3, 11, 13, and 14 are rejected under 35 U.S.C. 102(e) as being anticipated by Liu (U.S. Patent Application Publication No. 2005/0001796).

Regarding claim 1, Liu discloses a liquid crystal display device having:

a transfective liquid crystal display panel (Figure 14 elements 120, 12022, 12024);
a front light unit (112, 114) for supplying a light for displaying an image; and
a micro lens sheet (Figures 8 or 9; Paragraphs [0031], [0032]), and condensing the incident light on the transfective liquid crystal panel (Paragraph [0031]).

Regarding claim 2, Liu discloses the image as displayed on both front and rear of the transfective liquid crystal by first and second display modes, respectively, the first display mode allowing the image to be displayed in front of the transfective liquid crystal panel using the light reflected by a reflective region of the transfective liquid crystal panel (112A), the second display mode allowing the image to be displayed in rear of the transfective liquid crystal panel using the

light transmitted through a transmissive region of the transfective liquid crystal (112B; Paragraph [0032]).

Regarding claim 3, Liu discloses the front light unit as including a light source on a side surface thereof (112).

Regarding claim 11, Liu discloses the micro lens sheet as formed in a shape from the proposed list (Figures 8 and 9).

Regarding claim 13, Liu discloses the micro lens sheet as formed such that a lens shape is formed at a location corresponding to each unit pixel of the transfective liquid crystal panel (Figures 8 and 9)

Regarding claim 14, Liu discloses the micro lens sheet as formed in a shape from the proposed list (Figures 8 and 9).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-3, 11, 13, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu (U.S. Patent Application Publication No. 2005/0001796 “Liu ‘796”) in view of Liu (U.S. Patent Application Publication No. 2004/0041965 “Liu ‘965”).

Regarding claim 1, Liu ‘796 discloses a liquid crystal display device having:

- a transfective liquid crystal display panel (Figure 14 elements 120, 12022, 12024);
- a front light unit (112, 114) for supplying a light for displaying an image; and
- a micro lens sheet (Figures 8 or 9; Paragraphs [0031], [0032]), and condensing the incident light on the transfective liquid crystal panel (Paragraph [0031]).

Liu ‘796 fails to disclose the micro lens sheet as disposed between the transfective liquid crystal panel (including array and color filter substrates) and the front light unit. Instead, Liu ‘796 only discloses the micro lens sheet as on the color filter substrate (e.g. Figures 8 and 9, Figure 14 element 116, Figure 18) and condensing light onto the transfective panel (120, 172).

Also see description of Paragraph [0031]. Liu '965, however, teaches an analogous arrangement of a light source and liquid crystal panel in which the lens sheet is interchangeably positioned within the liquid crystal panel (e.g. Liu '965: Figure 9) as shown by Liu '796, or outside the panel (Liu '965: Figure 10) between the light source (Liu '965: element 16) and the panel (Liu '965: element 13).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to place the micro lens sheet between the transfective liquid crystal panel and the front light unit. Liu '965 teaches such a rearrangement of the micro lens sheet position as a functionally equivalent arrangement and alternative placement of the micro lens sheet that achieves an improved utilization of the light source (Liu '965: Paragraph [0042]).

Regarding claim 2, Liu '796 discloses the image as displayed on both front and rear of the transfective liquid crystal by first and second display modes, respectively, the first display mode allowing the image to be displayed in front of the transfective liquid crystal panel using the light reflected by a reflective region of the transfective liquid crystal panel (112A), the second display mode allowing the image to be displayed in rear of the transfective liquid crystal panel using the light transmitted through a transmissive region of the transfective liquid crystal (112B; Paragraph [0032]).

Regarding claim 3, Liu '796 discloses the front light unit as including a light source on a side surface thereof (112).

Regarding claim 11, Liu '796 discloses the micro lens sheet as formed in a shape from the proposed list (Figures 8 and 9).

Regarding claim 13, Liu '796 discloses the micro lens sheet as formed such that a lens shape is formed at a location corresponding to each unit pixel of the transfective liquid crystal panel (Figures 8 and 9)

Regarding claim 14, Liu '796 discloses the micro lens sheet as formed in a shape from the proposed list (Figures 8 and 9).

Claims 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu '796 in view of Liu '965.

Liu '796 fails to explicitly disclose the type of light source on the side surface of the front light. The examiner takes official notice that each of the proposed types of light sources are conventional and well known implementations of a light source on a side surface of a front light.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the light source as any of the proposed types of light sources. One would have been motivated to implement the light source from any of the proposed types to benefit from the known advantages of the particular implementation including brightness, power efficiency, cost, etc.

Claims 7-9 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu '796 in view of Liu '965 and in further view of Ha et al. (U.S. Patent Application Publication No. 2002/0105604 "Ha").

Regarding claims 7-9 and 12, Liu '796 fails to explicitly disclose the elements of a transfective liquid crystal panel.

Ha, however, teaches the first substrate (Figure 7 element 111) including an array device (Figure 1) having a thin film transistor (abstract; Figure 7), a transmissive electrode (119a) formed on the array device for displaying the image by transmitting the incident light and a reflective plate (166a) for displaying the image by reflecting the incident light); a second substrate (Figure 1 element 15) disposed on a position which is opposite to the first substrate, wherein the second substrate includes a color filter (17) formed on a location corresponding to a region where the transmissive electrode of the first substrate is formed (Figures 1 and 2), and a black matrix (16) formed between the color filters; and a liquid crystal panel (Figure 2 element 23) filled between the first substrate and the second substrate; a plurality of gate lines formed in a first direction (25); a plurality of data lines formed perpendicular to the gate lines (27); a pixel region defined by the gate line and the data line (P); and a thin film transistor (T) formed at a region where the gate line and the data line are intersected with each other, and further comprising an insulating layer (Figure 7 element 169) formed on the transmissive electrode, and common electrode (Figure 1 element 13) under the color filter.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the various elements conventional to a transfective display as taught by Ha in the display device disclosed by Liu '796. One would have been motivated to incorporate

such elements to benefit from a display capable of displaying in reflective and transmissive modes and in color according to conventional means.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Liu '796 in view of Liu '965 and Ha and in further view of Kurematsu et al. (U.S. Patent No. 5,101,279 "Kurematsu").

Liu '796 and Ha fail to disclose the micro lens sheet as condensing light incident from the light source on an opening of the transfective liquid crystal panel and the opening as a region where the black matrix of the transfective liquid crystal panel is not formed. Kurematsu, however, teaches such micro lenses as formed to converge light such that it directed away from the black matrix and other light blocking elements (Column 6 lines 18-24).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to form the micro lens to converge light on an opening in a region where the black matrix is not formed. One would have been motivated to form the micro lens as proposed to benefit from an improved aperture ratio (light usage efficiency) according to the teachings of Kurematsu (Column 6 lines 27-30).

Claim 15, 16, and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu '796 in view of Liu '965 and in further view of Shimamura (U.S. Patent Application Publication No. 2003/0125008).

Regarding claims 15 and 18-20, Liu '796 discloses all of the proposed limitations except for a communication unit and a control unit as proposed. Shimamura, however, teaches an

analogous cell phone device as having a communication unit (Figure 11 element 7) for communicating with an exterior and a control unit (3) for controlling the communication unit and the liquid crystal display device (9).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to form the mobile communication terminal disclosed by Liu '796 to have the proposed communication unit and control unit. One would have been motivated to implement the mobile device with the proposed elements to enable controlled display and communication according to conventional means.

Regarding claim 16, Liu '796 discloses the proposed first and second display modes (Paragraph [0008], Figures 4 and 14).

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Liu '796 in view of Liu '965, Ha and Shimamura and in further view of Kurematsu.

Liu '796 and Ha fail to disclose the micro lens sheet as condensing light incident from the light source on an opening of the transfective liquid crystal panel and the opening as a region where the black matrix of the transfective liquid crystal panel is not formed. Kurematsu, however, teaches such micro lenses as formed to converge light such that it directed away from the black matrix and other light blocking elements (Column 6 lines 18-24).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to form the micro lens to converge light on an opening in a region where the black matrix is not formed. One would have been motivated to form the micro lens as proposed to

benefit from an improved aperture ratio (light usage efficiency) according to the teachings of Kurematsu (Column 6 lines 27-30).

Response to Arguments

Applicant's arguments filed 9/28/09 have been fully considered but they are not persuasive.

The combination of elements of Figure 14, elements 120, 12022, 12024 has been equated to the claimed term "transflective liquid crystal panel". When such a combination of elements is equated to the transflective liquid crystal panel, Liu '796 discloses the limitations "wherein the micro lens sheet is disposed between the transflective liquid crystal panel and the front light" (Figures 14, 18). Such a usage is also consistent with the description of Liu '796, paragraph [0031]: "...a light-condensing structure 802 functioning to condense the light beams to the display panel...".

With regard to Figure 18 of Liu '796, when the transflective liquid crystal panel is regarded as elements 172, 17222 and 17224, claims 1 and 15 read on the reference.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL H. CALEY whose telephone number is (571)272-2286. The examiner can normally be reached on M-F 6:00 a.m - 2:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571)272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michael H. Caley/
Primary Examiner, Art Unit 2871